## REMARKS

Applicants respectfully request entry of the foregoing amendments and reconsideration of the application in view of the amendments above and the remarks below. Applicants note that claims 1-36 have been amended for purposes of readability and not for reasons related to the cited references. Claims 1-36 remain pending in the application. Claims 1, 16, 27, 31, and 34 are the independent claims.

### Form PTO/SB/08A not returned

Applicants note that the Form PTO/SB/08A submitted with the information disclosure statement filed on March 14, 2003, has not been initialed by the Examiner and returned. Accordingly, Applicants respectfully request that the Examiner initial this form, and return a copy of the initialed form with the next communication from the Patent Office.

### The Abstract has been amended

The Examiner has objected to the Abstract for containing legal phrases. In response, Applicants have amended the Abstract to eliminate the word "comprises." Accordingly, Applicants respectfully request the withdrawal of the Examiner's objection to the Abstract.

### Formal Drawings submitted herewith

The drawings have been objected to for the reasons listed on the Notice of Draftsperson's Patent Drawing Review Form. In response, Applicants are submitting formal drawings, which are filed concurrently herewith, which address the objections noted on that form. Accordingly, Applicants respectfully request the withdrawal of the to the drawing objections.

### Claims 1, 3-4, and 27-33 are not anticipated by *Asakura et al.*

Claims 1, 3-4 and 27-33 stand rejected under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent No. 5,777,410 to *Asakura et al.* (hereinafter *Asakura*). Applicants respectfully traverse this rejection for the reasons set forth below.

The invention as recited in Claim 1 is an apparatus including a resistive element positionable on a first surface. A first lead and a second lead are electrically connected to the

resistive element, the first lead and the second lead being collectively configured to supply a first voltage. An intermediate lead that is electrically connected to the resistive element ***between the first lead and the second lead*** is ***configured to provide a second voltage***. A contact element positionable on a second surface is configured to contact at least a portion of the resistive element, and to detect a voltage at a contact position. The detected voltage is associated with the position of the second surface relative to the first surface.

*Asakura* is directed to a motor actuator and method of making the same, which is primarily used for controlling an air conditioning system in a vehicle. This actuator includes a motor 20, a pattern board 40, and a conducting unit 50, all of which are accommodated within a housing 10. Three motor actuators are described, each of which have a pattern board 40 with a unique configuration. The three corresponding pattern board 40 configurations are shown in Figures 7A, 7B, and 7C.

The third pattern board 46 configuration is shown in Figure 7C. This configuration makes use of an outer ring-shaped conductive portion 301 and an inner ring-shaped portion 303, which are electrically connected by a circular-arc resistive portion 302. The resistive portion 302 has a higher resistance than the conductive portions 301, 303, and thus act as a resistor. The brushes 61-66 of the conductive unit 50 slide over the conductive portions 301, 303 and the resistive portion 302 at the respective contact positions 311-316. Thus, the first two brushes 61, 62 contact the outer conductive portion 301 at the first two contact points 311, 312, which are connected at terminal 321 of the control unit 320. The second pair of brushes 63, 64 contact the resistive portion 302 at the second two contact points 313, 314, which are connected at terminal 322 of the control unit 320. The last pair of brushes 65, 66 contact the inner conductive portion 303 at the final two contact points 315, 316, which are connected at terminal 323 of control unit 320.

The resistance between the contact points 313, 314 on the resistive portion 302 and the first two contact points 311, 312 varies relative to the position of the contact points 313, 314 on the resistive portion 302. As the position of these contact points 313, 314 moves along the resistive portion 302, the change in resistance corresponds to a change in voltage, or electric potential, between the first two contact points 311, 312 and the contact points 313, 314 on the resistive portion 302. The control unit 320 applies a voltage across terminals 324 and 325 to

drive the motor 20, which rotates the pattern board 46 in a direction in which a potential difference between the first two contact points 311, 312 and the contact points 313, 314 on the resistive portion 302 is detected. When this difference in electrical potential between the various contact points reaches a pre-determined voltage, the control unit 320 stops the motor 20. To generate the voltage differences detected by the control unit 320, the control unit applies a fixed voltage across terminals 321 and 323. It is this fixed voltage that is used as a reference voltage to determine the rotational position of the pattern board 46, and the corresponding position of the output gear 36 upon which the board 46 is mounted.

Unlike the as invention recited in Claim 1, the motor actuator of *Asakura* does not have a first lead and a second lead electrically connected to a resistive element and collectively configured to supply a first voltage, and ***an intermediate lead*** electrically connected to the resistive element ***between the first lead and the second lead*** that is ***configured to provide a second voltage***. To the contrary, the actuator of *Asakura* applies a fixed voltage across terminals 321, 323 of the control unit 320. As the pattern board 46 is rotated, the fixed voltage between these two terminals 321, 323, is provided and the voltage between the first two points 311, 312 and the contact points 313, 314 on the resistive portion 302 is measured at terminal 322 of the control unit 320. Therefore, *Asakura* does not disclose or suggest an intermediate lead electrically connected to the resistive element ***between the first lead and the second lead*** that is ***configured to provide a second voltage***.

The invention as recited in Claim 27 includes a resistive element positionable on a first surface that is ***formed from a plurality of portions*** that has a plurality of leads ***each configured to provide a voltage to each of the plurality of portions of the resistive element***. A contact element is positionable on a second surface, and is configured to contact the resistive element to detect a voltage at a contact position, the detected voltage being associated with the position of the second surface relative to the first surface. Additionally, a voltage controller configured to ***selectively provide a voltage to each of the plurality of portions of the resistive element*** according to the position of the contact element relative to the resistive element is also provided.

Unlike the invention as recited in Claim 27, however, the *Asakura* actuator does not disclose or suggest a resistive element ***formed from a plurality of portions***. Rather, *Asakura* teaches a single resistive element 302 in one configuration of the pattern board 46, shown in

Figure 7C. The resistive element 302 is connected electrically to conductive elements 301, 303. These conductive elements 301, 303 are not resistive elements, however, and cannot be considered portions of a resistive element.

*Asakura* also does not disclose or suggest a plurality of leads ***each configured to provide a voltage to each of the plurality of portions of the resistive element***, as recited in claim 27. Such a plurality of leads would not, of course, even be contemplated by *Asakura* because *Asakura* does not disclose a resistive element formed from a plurality of portions.

Moreover, *Asakura* does not provide a voltage controller configured to ***selectively provide a voltage*** to ***each of a plurality of portions of a resistive element***, as recited in Claim 27. Specifically, *Asakura* provides a ***fixed*** voltage across terminals 321 and 323. *Asakura* does not disclose or suggest *selectively* providing a voltage. Additionally, because the resistive element 302 of *Asakura* is not formed from a plurality of portions, *Asakura* does not disclose or suggest selectively providing a voltage to ***each of a plurality of portions of a resistive element***, as recited in Claim 27.

The invention as recited in Claim 31 discloses an apparatus including a resistive element positionable on a first surface and a pair of leads electrically connected to the resistive element that are configured to supply a first voltage. A contact element positionable on a second surface is configured to contact at least a portion of the resistive element. This contact element is ***configured to provide a second voltage*** to the resistive element.

Unlike the invention as disclosed in Claim 31, *Asakura* does not disclose or suggest a contact element positionable on a second surface configured to contact at least a portion of the resistive element and ***configured to provide a second voltage to the resistive element***. To the contrary, *Asakura* provides a ***fixed*** voltage across terminals 321, 323 of the control unit 320. Brushes 61-66 contact the pattern board 46 at the various contact locations 311-316 to conduct current from one contact point to another. Brushes 63, 64 contact the resistive portion 302 at contact point 313, 314. However, *Asakura* does not disclose or suggest ***providing a second voltage to a resistive element*** by way of these brushes that contact the resistive portion 302 or any contact element configured to contact a resistive element.

Accordingly, for at least the reasons described above, Applicants respectfully request the withdrawal of the rejection of independent claims 1, 27, and 31 under 35 U.S.C. § 102(b).

Additionally, for at least the same reasons described above in connection with their respective independent claims. Applicants respectfully request the withdrawal of the rejection of claims 3-4, 28-30, and 32-33.

**Claims 1-2, 5-6, and 13-15 are not anticipated by *Takiguchi et al.***

Claims 1-2, 5-6, and 13-15 stand rejected under 35 U.S.C. § 102(e) as being anticipated by U.S. Patent No. 6,347,482 to *Takiguchi et al.* (hereinafter *Takiguchi*). Applicants respectfully traverse this rejection for the reasons set forth below.

*Takiguchi* discloses a safety device for power windows that uses a potentiosensor 20 to detect the rotational, angular position of an output shaft adapted to rotate at a slower speed by reducing the speed of a driving motor 9 for opening and closing a vehicle window. The potentiosensor 20 uses a resistance track plate 21, which includes a circular resistance track 25a and two conductor tracks 25b, 25c, and a rotating plate 23, which includes conductive brushes 24a, 24b that are adapted to slide over the resistance track plate 21. The window's position is detected based on a resistance value measured between the conductive brushes 24a, 24b as they are rotationally moved on the resistance track 25a in response to the rotating position of the rotating plate 23.

The resistance track 25a has higher voltage and lower voltage positions separated by 180 degrees so that the position of the window can be measured by way of voltage differences between the brushes 24a, 24b at different positions along the resistance track 25a. The higher voltage VCC, which is five volts, is applied at the top-most portion of the resistance track 25a, while the lower voltage GND is provided by grounding to zero volts the bottom-most portion of the resistance track 25a. Output voltages VA, VB are measured at respective terminals T3, T4 of the conductor tracks 25b, 25c, respectively, and correspond to the voltages of the brushes 24a, 24b.

When the rotating plate 23 is rotated, the conductive brushes 24a, 24b are rotated along the surface of the resistance track plate 21. Thus, the contact positions of the brushes 24a, 24b along the resistance track 25a are changed as the plate 23 is rotated. The corresponding output voltages VA, VB change as the brushes 24a, 24b move along the resistance track 25a. This information can be used to determine the exact position of the rotating plate 23.

Unlike the invention recited in claim 1, *Takiguchi* fails to disclose or suggest a ***first lead and a second lead*** electrically connected to a resistive element ***collectively configured to supply a first voltage*** and an ***intermediate lead*** electrically connected to a resistive element ***between the first lead and the second lead*** configured to ***provide a second voltage***, as the invention recited in claim 1 provides.

To the contrary, *Takiguchi* discloses two terminals T1, T2 configured to supply two voltages VCC (5 volts) and GND (0 volt). Figure 5A of *Takiguchi* is an "equivalent circuit diagram" of the potentiosensor 20. Because this is the equivalent circuit of the potentiosensor 20, which is in the form of a circle, as shown in Figure 4A, the two ground terminals shown in Figure 5A are actually the same terminal (i.e., terminal T2). This potentiosensor 20, and the corresponding resistance track 25a, can only be a circular device, as the safety device of *Takiguchi* is for the explicit purpose of controlling and reducing the rotational angular position of an output shaft to control the opening and closing of a window of a vehicle. To control this rotation, a rotation plate is required, and thus the resistance track 25a must form a circle as well.

Therefore, *Takiguchi* does not disclose or suggest a ***first lead and a second lead collectively configured to supply a first voltage*** and an ***intermediate lead*** electrically connected to a resistive element ***between the first lead and the second lead*** that is ***configured to provide a second voltage***, as recited in claim 1.

Accordingly, Applicants respectfully request the withdrawal of the rejection of interdependent claim 1 under 35 U.S.C. § 102(e) for at least the reasons discussed above. Additionally, Applicants respectfully request the withdrawal of the rejection of claims 2, 5-6, and 13-15, which depend therefrom and are patentable for at least the same reasons discussed above.

**Claims 1-2 and 7-26 are not anticipated by *Gonring et al.***

Claims 1-2 and 7-26 stand rejected under 35 U.S.C. § 102(e) as being anticipated by U.S. Patent No. 6,414,607 to *Gongring et al.* (hereinafter *Gonring*). Applicants respectfully traverse this rejection for the reasons set forth below.

*Gonring* is directed to a throttle position sensor with improved redundancy and high resolution. The throttle position sensor makes use of three sensing elements, or sensors 32, 50, 54, which together measure the physical position of a manually movable member. The multiple

sensors 32, 50, and 54 provide redundancy, allowing operation of the throttle position sensor even if one of the sensing elements is disabled. Three wipers 41, 42, 43 are each mechanically connected to a throttle handle 10 and move in response to movement of the throttle handle 10. Each of the wipers 41, 42, 43 detect potentials across each of the sensors 32, 50, 54, which are output as signals S1, S2, S3 to a controller 60.

The first sensor is made up of two separate sensing elements 34, 36.[1] A terminal between each of the separate sensing elements 34, 36 is grounded at a central point 38, such that when the throttle handle 10 is in the neutral position, the first wiper arm 41 is electrically grounded between the two sensing elements 34, 36. As the throttle handle moves in either direction, potential differences are detected and communicated in the form of output signals S1, S2, and S3. There is a voltage "dead band" 70 separating the individual sensing elements 34, 36.

Unlike the invention recited in claim 1, *Gonring* fails to disclose or suggest ***a resistive element*** having a ***first lead and a second lead*** electrically connected thereto configured to supply a first voltage and an ***intermediate lead*** electrically connected thereto ***between the first lead and the second lead*** that is configured to provide a second voltage, as recited in claim 1. Rather, *Gonring* discloses two separate sensing elements 34, 38. Each of these individual sensing elements 34, 38 has, at most, two leads attached thereto, each of which provides an individual voltage to the resistive sensing elements 34, 38. For each of these sensing elements 34, 38, there is no ***first lead and second lead*** collectively configured to supply a first voltage or an ***intermediate lead*** electrically connected to the resistive element ***between the first lead and the second lead*** that is configured to provide a second voltage.

The invention recited in claim 16 provides an apparatus having a resistive element positionable on a first surface that is ***formed from a first resistive strip and a second resistive strip***. A plurality of leads is ***electrically connected to each resistive strip*** and is configured to provide a voltage to the first resistive strip and the second resistive strip.

[1] Applicants note that the second of the two separate sensing elements (element 36) is properly labeled in Fig. 2 of *Gonring*, but is mislabeled in Fig. 3 as item 38.

Unlike the invention recited in claim 16, *Gonring* fails to disclose or suggest a resistive element positionable on a first surface that is ***formed from a first resistive strip and a second resistive strip***. Rather, *Gonring* fails to disclose or suggest a plurality of leads that are ***electrically connected to each resistive strip*** that is configured to provide a voltage to the first resistive strip and the second resistive strip. Specifically, because only three leads (i.e., two 5 volt leads, and one ground lead) and two independent sensing elements 34, 36 are disclosed in *Gonring*, only one of the sensing elements 34, 36 could have a plurality of leads associated therewith. The other sensing element would necessarily have only one lead associated therewith. Thus, *Gonring* fails to disclose or suggest a resistive element formed from a first resistive strip and a second resistive strip having a *plurality of leads* electrically connected to *each resistive strip*, as claim 16 recites.

Accordingly, for at least the reasons discussed above, Applicants respectfully request the withdrawal of the rejection of independent claims 1 and 16 under 35 U.S.C. § 102(e). Additionally, for at least the same reasons as those discussed above in connection with their respective independent claims, Applicants respectfully request the withdrawal of the rejection of dependent claims 2, 7-15, and 17-26.

**Claims 34-36 are not obvious in view of *Fish* and *Gonring et al.***

Claims 34-36 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 6,347,482 to *Fish* (hereinafter *Fish*) in view of *Gonring*. Applicants respectfully traverse this rejection for the reasons set forth below.

The invention as recited in claim 34 is directed to an apparatus including a manipulandum in communication with a computer that is configured to control a graphical object associated with an application associated with the computer. The apparatus also includes a sensor having a resistive element on a first surface and a contact element on a second surface, the resistive element being electrically connected to a first plurality of leads to configured to provide a first voltage and to a second plurality of leads ***at locations intermediate to the first plurality of leads*** configured to provide a second voltage.

*Fish* discloses a force feedback computer input and output device with coordinated haptic elements. However, as specifically admitted in the Office Action, *Fish* "does not specifically disclose the sensor as claimed in claim 34." (Office Action at Page 9)

Additionally, *Gonring* fails to disclose a sensor having a resistive element electrically connected to a first plurality of leads configured to provide a first voltage and electrically connected to a second plurality of leads ***at locations intermediate to the first plurality of leads*** configured to provide a second voltage. To the contrary, *Gonring* discloses two separate sensing elements 34, 36, and three leads. Thus, there is no sensor having a resistive element electrically connected to a first plurality and a second plurality of leads. Thus, the most leads to which any of the separate sensing elements taught by *Gonring* can be electrically connected is two.

Accordingly, as *Fish* fails to remedy the deficiencies of *Gonring*, as discussed above, even when considered in combination with that reference, Applicants respectfully request withdrawal of the rejection of independent claim 34 under 35 U.S.C. § 103(a). Additionally, for at least these reasons, Applicants respectfully request the withdrawal of the rejection of claims 35 and 36, which depend therefrom and are patentable for at least the same reasons as independent claim 34.

## Conclusion

All rejections having been addressed, Applicants respectfully submit that the present application is in condition for allowance, and earnestly solicit a Notice of Allowance, which is believed to be in order. Should the Examiner have any questions regarding this communication, or the application in general, he is invited to telephone the undersigned at 703-456-8108.

The Commissioner is hereby authorized to charge any appropriate fees under 37 C.F.R. §§ 1.16, 1.17, and 1.21 that may be required by this paper, and to credit any overpayment, to Deposit Account No. 50-1283.

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